

**Polymers with New Sequence Distributions****ABSTRACT**

The invention relates to new polymerization processes including diluents including hydrofluorocarbons and their use to produce novel polymers with new sequence distributions. In particular, the invention relates to copolymers of an isoolefin, preferably isobutylene, and an alkylstyrene, preferably methylstyrene, even more preferably *para*-methylstyrene, with new sequence distributions. The copolymer may optionally be halogenated.